DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

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M A S T E R M I N I M U M E Q U I P M E N T L I S T

CE-525

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73	73-1	1	11/22/1994
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78	78-1	1	11/22/1994

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Highlights of Change

Relief for Talking Checklist added.

Relief for First Aid Kits added in accordance with Policy Letter 73, designated as Global Change 17.

Relief for Portable Fire Extinguishers revised in accordance with Policy Letter 75, designated as Global Change 19.

Relief for Cockpit and Instrument Lighting System revised in accordance with Policy Letter 77, designated as Global Change 21.

Relief for ATC Transponder and Automatic Altitude Reporting Systems revised in accordance with Policy Letter 76, designated as Global Change 20.

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Definitions

1. System Definitions.

System numbers are based on the Air Transport Association (ATA) Specification Number 100 and items are numbered sequentially.

a. "Item" (Column 1) means the equipment, system, component, or function listed in the "Item" column.

b. "Number Installed" (Column 2) is the number (quantity) of items normally installed in the aircraft. This number represents the aircraft configuration considered in developing this MMEL. Should the number be a variable (e.g., passenger cabin items) a number is not required.

c. "Number Required for Dispatch" (Column 3) is the minimum number (quantity) of items required for operation provided the conditions specified in Column 4 are met.

NOTE: Where the MMEL shows a variable number required for dispatch, the MEL must reflect the actual number required for dispatch or an alternate means of configuration control approved by the Administrator.

d. "Remarks or Exceptions" (Column 4) in this column includes a statement either prohibiting or permitting operation with a specific number of items inoperative, provisos (conditions and limitations) for such operation, and appropriate notes.

e. A vertical bar (change bar) in the margin indicates a change, addition or deletion in the adjacent text for the current revision of that page only. The change bar is dropped at the next revision of that page.

2. "Airplane/Rotorcraft Flight Manual" (AFM/RFM) is the document required for type certification and approved by the responsible FAA Aircraft Certification Office. The FAA approved AFM/RFM for the specific aircraft is listed on the applicable Type

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Definitions

Certificate Data Sheet.

3. "As required by FAR" means that the listed item is subject to certain provisions (restrictive or permissive) expressed in the Federal Aviation Regulations operating rules. The number of items required by the FAR must be operative. When the listed item is not required by FAR it may be inoperative for time specified by repair category.

4. Each inoperative item must be placarded to inform and remind the crewmembers and maintenance personnel of the equipment condition.

NOTE: To the extent practical, placards should be located adjacent to the control or indicator for the item affected; however, unless otherwise specified, placard wording and location will be determined by the operator.

5. "-" symbol in Column 2 and/or Column 3 indicates a variable number (quantity) of the item installed.

6. "Deleted" in the remarks column after a sequence item indicates that the item was previously listed but is now required to be operative if installed in the aircraft.

7. "ER" refers to extended range operations of a two-engine airplane which has a type design approval for ER operations and complies with the provisions of Advisory Circular 120-42A.

8. "Federal Aviation Regulations" (FAR) means the applicable portions of the Federal Aviation Act and Federal Aviation Regulations.

9. "Flight Day" means a 24 hour period (from midnight to midnight) either Universal Coordinated Time (UCT) or local time, as established by the operator, during which at least one flight is initiated for the affected aircraft.

10. "Icing Conditions" means an atmospheric environment that may cause ice to form on the aircraft or in the engine(s).

11. Alphabetical symbol in Column 4 indicates a proviso (condition or limitation) that must be complied with for

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operation with the listed item inoperative.

12. "Inoperative" means a system and/or component malfunction to the extent that it does not accomplish its intended purpose and/or is not consistently functioning normally within its approved operating limit(s) or tolerance(s).

13. "Notes:" in Column 4 provides additional information for crewmember or maintenance consideration. Notes are used to identify applicable material which is intended to assist with compliance, but do not relieve the operator of the responsibility for compliance with all applicable requirements. Notes are not a part of the provisos.

14. Inoperative components of an inoperative system: Inoperative items which are components of a system which is inoperative are usually considered components directly associated with and having no other function than to support that system. (Warning/caution systems associated with the inoperative system must be operative unless relief is specifically authorized per the MMEL).

15. "(M)" symbol indicates a requirement for a specific maintenance procedure which must be accomplished prior to operation with the listed item inoperative. Normally these procedures are accomplished by maintenance personnel; however, other personnel may be qualified and authorized to perform certain functions. Procedures requiring specialized knowledge or skill, or requiring the use of tools or test equipment should be accomplished by maintenance personnel. The satisfactory accomplishment of all maintenance procedures, regardless of who performs them, is the responsibility of the operator. Appropriate procedures are required to be published as part of the operator's manual or MEL.

16. "(O)" symbol indicates a requirement for a specific operations procedure which must be accomplished in planning for and/or operating with the listed item inoperative. Normally these procedures are accomplished by the flight crew; however, other personnel may be qualified and authorized to perform certain functions. The satisfactory accomplishment of all procedures, regardless of who performs them, is the responsibility of the operator. Appropriate procedures are

Definitions

required to be published as a part of the operator's manual or MEL.

NOTE: The (M) and (O) symbols are required in the operator's MEL unless otherwise authorized by the Administrator.

17. "Deactivated" and "Secured" means that the specified component must be put into an acceptable condition for safe flight. An acceptable method of securing or deactivating will be established by the operator.

18. "Visual Flight Rules" (VFR) is as defined in FAR Part 91. This precludes a pilot from filing an Instrument Flight Rules (IFR) flight plan.

19. "Visual Meteorological Conditions" (VMC) means the atmospheric environment is such that would allow a flight to proceed under the visual flight rules applicable to the flight. This does not preclude operating under Instrument Flight Rules.

20. "Visible Moisture" means an atmospheric environment containing water in any form that can be seen in natural or artificial light; for example, clouds, fog, rain, sleet, hail, or snow.

21. "Passenger Convenience Items" means those items related to passenger convenience, comfort or entertainment such as, but not limited to, galley equipment, movie equipment, ash trays, stereo equipment, overhead reading lamps, etc.

22. Repair Intervals: All users of an MEL approved under FAR 121, 125, 129 and 135 must effect repairs of inoperative systems or components, deferred in accordance with the MEL, at or prior to the repair times established by the following letter designators:

Category A. Items in this category shall be repaired within the time interval specified in the remarks column of the operator's approved MEL.

Category B. Items in this category shall be repaired within three (3) consecutive calendar days (72 hours), excluding the day the malfunction was recorded in the aircraft maintenance

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record/logbook. For example, if it were recorded at 10 a.m. on January 26th, the three day interval would begin at midnight the 26th and end at midnight the 29th.

Category C. Items in this category shall be repaired within ten (10) consecutive calendar days (240 hours), excluding the day the malfunction was recorded in the aircraft maintenance record/logbook. For example, if it were recorded at 10 a.m. on January 26th, the 10 day interval would begin at midnight the 26th and end at midnight February 5th.

Category D. Items in this category shall be repaired within one hundred and twenty (120) consecutive calendar days (2880 hours), excluding the day the malfunction was recorded in the aircraft maintenance log and/or record.

The letter designators are inserted adjacent to Column 2.

23. Electronic fault alerting system - General

New generation aircraft display system fault indications to the flight crew by use of computerized display systems. Each aircraft manufacturer has incorporated individual design philosophies in determining the data that would be represented. The following are customized definitions (specific to each manufacturer) to help determine the level of messages affecting the aircraft's dispatch status. When preparing the MEL document, operators are to select the proper Definition No. 23 for their aircraft, if appropriate.

a. BOEING (B-757/767, B-747-400, B-777)

Boeing airplanes equipped with Engine Indicating and Crew Alerting Systems (EICAS), provide different priority levels of system messages (WARNING, CAUTION, ADVISORY, STATUS and MAINTENANCE). Any messages that affects airplane dispatch status will be displayed at a STATUS message level or higher. The absence of an EICAS STATUS or higher level (WARNING, CAUTION, ADVISORY) indicates that the system/component is operating within its approved operating limits or tolerances.

System conditions that result only in a maintenance level message, i.e. no correlation with a higher level EICAS message,

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do not affect dispatch and do not require action other than as addressed within an operators standard maintenance program.

b. DOUGLAS (MD-11)

Some Douglas aircraft are equipped with an alerting function which is a subsystem within the Electronic Instrument System (EIS). The alerting function provides various levels of system condition alerts (WARNING, CAUTION, ADVISORY, MAINTENANCE and STATUS).

Alerts that affect aircraft dispatch will include WARNING, CAUTION, STATUS or MAINTENANCE level. MAINTENANCE alerts are displayed on the status page of the EIS display panel under the maintenance heading.

A MAINTENANCE alert on the EIS indicates the presence of a system fault which can be identified by the Central Fault Display System (CFDS) interrogation. The systems are designed to be fault tolerant, however, for any MAINTENANCE alert, the MEL must be verified for dispatch purposes.

c. AIRBUS (A-300-600, A-310, A-320/319/321, A-330, A-340

Airbus aircraft equipped with Electronic Centralized Aircraft Monitoring (ECAM) provide different levels of system condition messages (WARNING, CAUTION, STATUS, and ADVISORY). A-320/319/321, A-330, and A-340 also provide MAINTENANCE status messages.

d. FOKKER (FK-100)

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Fokker aircraft are equipped with Multi Function Display System (MFDS) which provides electronic message referring to the different priority levels of system information (WARNING (red), CAUTION (amber), AWARENESS (cyan) AND STATUS (white). Any messages that affects aircraft dispatch will be at the WARNING, CAUTION or AWARENESS level. In these cases the MEL must be verified for dispatch capability and maintenance may be required.

System conditions that only require maintenance are not presented on the flight deck. These maintenance indications/messages may be presented on the Maintenance & Test Panel (MAP) or the Centralized Fault Display Unit (CFDU) and by dedicated Built In Test Evaluation (BITE) of systems.

24. "Administrative control item" means an item listed by the operator in the MEL for tracking and informational purposes. It may be added to an operator's MEL by approval of the Principal Operations Inspector provided no relief is granted, or provided conditions and limitations are contained in an approved document (i.e. Structural Repair Manual, airworthiness directive, etc.). If relief other than that granted by an approved document is sought for an administrative control item, a request must be submitted to the Administrator. If the request results in review and approval by the FOEB, the item becomes an MMEL item rather than an administrative control item.

25. "***" symbol in Column 1 indicates an item which is not required by regulation but which may have been installed on some models of aircraft covered by this MMEL. This item may be included on the operator's MEL after the approving office has determined that the item has been installed on one or more of the operator's aircraft. The symbol, however, shall not be carried forward into the operator's MEL. It should be noted that neither this policy nor the use of this symbol provide authority to install or remove an item from an aircraft.

26. "Excess Items" means those items that have been installed that are redundant to the requirements of the FARs.

27. "Day of Discovery" is the calendar day an equipment/instrument malfunction was recorded in the aircraft

maintenance log and or record. This day is excluded from the calendar days or flight days specified in the MMEL for the repair of an inoperative item of equipment. This provision is applicable to all MMEL items, i.e., categories "A, B, C, and D."

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Preamble
(Effective 6/14/89)

The following is applicable for authorized certificate holders operating under Federal Aviation Regulations (FAR) Parts 121, 125, 129, 135: The FAR require that all equipment installed on an aircraft in compliance with the Airworthiness Standards and the Operating Rules must be operative. However, the Rules also permit the publication of a Minimum Equipment List (MEL) where compliance with certain equipment requirements is not necessary in the interests of safety under all operating conditions. Experience has shown that with the various levels of redundancy designed into aircraft, operation of every system or installed component may not be necessary when the remaining operative equipment can provide an acceptable level of safety. A Master Minimum Equipment List (MMEL) is developed by the FAA, with participation by the aviation industry, to improve aircraft utilization and thereby provide more convenient and economic air transportation for the public. The FAA approved MMEL includes those items of equipment related to airworthiness and operating regulations and other items of equipment which the Administrator finds may be inoperative and yet maintain an acceptable level of safety by appropriate conditions and limitations; it does not contain obviously required items such as wings, flaps, and rudders. The MMEL is the basis for development of individual operator MELs which take into consideration the operator's particular aircraft equipment configuration and operational conditions. Operator MELs, for administrative control, may include items not contained in the MMEL; however, relief for administrative control items must be approved by the Administrator. An operator's MEL may differ in format from the MMEL, but cannot be less restrictive than the MMEL. The individual operator's MEL, when approved and authorized, permits operation of the aircraft with inoperative equipment.

Equipment not required by the operation being conducted and equipment in excess of FAR requirements are included in the MEL with appropriate conditions and limitations. The MEL must not deviate from the Aircraft Flight Manual Limitations, Emergency Procedures or with Airworthiness Directives. It is important to remember that all equipment related to the airworthiness and the operating regulations of the aircraft not listed on the MMEL must be operative.

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Preamble
(Effective 6/14/89)

Suitable conditions and limitations in the form of placards, maintenance procedures, crew operating procedures and other restrictions as necessary are specified in the MEL to ensure that an acceptable level of safety is maintained.

The MEL is intended to permit operation with inoperative items of equipment for a period of time until repairs can be accomplished. It is important that repairs be accomplished at the earliest opportunity. In order to maintain an acceptable level of safety and reliability the MMEL establishes limitations on the duration of and conditions for operation with inoperative equipment. The MEL provides for release of the aircraft for flight with inoperative equipment. When an item of equipment is discovered to be inoperative, it is reported by making an entry in the Aircraft Maintenance Record/Logbook as prescribed by FAR. The item is then either repaired or may be deferred per the MEL or other approved means acceptable to the Administrator prior to further operation. MEL conditions and limitations, do not relieve the operator from determining that the aircraft is in condition for safe operation with items of equipment inoperative.

When these requirements are met, an Airworthiness Release, Aircraft Maintenance Record/Logbook entry, or other approved documentation is issued as prescribed by FAR. Such documentation is required prior to operation with any item of equipment inoperative.

Operators are responsible for exercising the necessary operational control to ensure that an acceptable level of safety is maintained. When operating with multiple inoperative items, the interrelationships between those items and the effect on aircraft operation and crew workload will be considered.

Operators are to establish a controlled and sound repair program including the parts, personnel, facilities, procedures, and schedules to ensure timely repair.

WHEN USING THE MEL, COMPLIANCE WITH THE STATED INTENT OF THE PREAMBLE, DEFINITIONS, AND THE CONDITIONS AND LIMITATIONS SPECIFIED IN THE MEL IS REQUIRED.

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Guidelines for (O) & (M) Procedures

The FOEB has identified a need for certain procedures to provide an adequate level of safety while providing relief for the following items. These procedures must be established by the operator. The following guidelines are to help establish these required procedures:

21-1 (O)Operations procedure to ensure the flow control valve is closed. One method would be to perform a pressurization preflight test.

21-2 (O)Operations procedure to verify the affected air source shut off valve is closed. One method would be to perform a pressurization preflight test.

21-3 (O)Operations procedure to ensure the Emergency Pressurization Solenoid Valve is closed.

21-4 (O)Operations procedure to ensure the windshield anti-ice flow control and shutoff valve is closed.

21-5 (O)Operations procedure to ensure the cabin pressurization auto schedule is operating normally. One method would be to perform a pressurization preflight test.

21-10 (M)Maintenance procedure to ensure the flow of service air to the cabin door primary seal is prevented.

21-12 (O)Operations procedure to ensure the Isobaric and Manual modes are operating normally.

21-14 (M)Maintenance procedure to secure the air conditioner and ensure it has not adversely affected any other structure or system.

21-15 (M)Maintenance procedure to secure cabin outflow valve(s) in the open position.

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Guidelines for (O) & (M) Procedures

22-1 (M)Maintenance procedure to ensure no electrical or mechanical fault exists that will have an adverse effect on any flight control system.

22-2 (M)Maintenance procedure to ensure no electrical or mechanical fault exists that will have an adverse effect on any flight control system.

23-3 (O)Operations procedure to ensure normal and emergency procedures and/or operating restrictions are established, used and given to the passengers.

27-1 (M)Maintenance procedure to ensure that the failure of the electric trim will not interfere with the operation of the manual trim.

30-3 (M)Maintenance procedure to ensure the engine anti-ice valve remains in the open position.

(M)Maintenance procedure to ensure the engine anti-ice valve has failed in the closed position.

30-4 (O)Operations procedure to ensure that the wing anti-ice valve is failed in the closed position.

31-2 (O)Operations procedure to ensure that all flight times are recorded and added to the total aircraft time.

32-1 (O)Operations procedure to ensure that the flight crew has knowledge of differing procedures and aircraft performance data.

33-7 (O)Operations procedure to ensure that passengers are notified of seat belt and no smoking requirements.

34-10 (O)Operations procedure to ensure altitude awareness.

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Guidelines for (O) & (M) Procedures

34-14-1 (M)Maintenance procedure to deactivate and secure the system.

34-14-2 (O)Operations procedure to ensure TA and RA display is visible to the non-flying pilot and audio functions are operative on flying pilot side.

34-14-3 (O)Operations procedure to ensure non-flying pilot monitors pilot's display.

(O)Operations procedure to ensure TA ONLY mode is selected and all TA functions/elements are operative.

34-14-4 (O)Operations procedure to ensure all RA display/functions are operative.

34-16-1 (O)Operations procedure to ensure alternatives are established and used for the appropriate inoperative mode(s).

34-16-4 (O)Operations procedure to ensure alternatives are established and used for the appropriate inoperative advisory callouts.

34-16-5 (O)Operations procedure to ensure alternative is established and used for the windshear mode.

78-1 (O)Operations procedure to ensure AFM performance limitations are complied with.

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SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
21 AIR CONDITIONING				
1. Flow Control Valve	C	1	0	(O)May be inoperative provided: a) Flight is conducted unpressurized, b) Cabin Pressurization Air Source Selector remains in FRESH AIR or OFF, c) All other components and functions of the pressurization system operate normally and d) Crew and passengers comply with any applicable oxygen requirements.
2. Air Source Shut Off Valves	C	2	1	(O)One may be inoperative provided: a) The affected air source shut off valve is verified failed in the closed position and b) All other components and functions of the pressurization system operate normally.
3. Emergency Pressurization Solenoid Valve	C	1	0	(O)May be inoperative provided the Emergency Pressurization Solenoid Valve is verified closed.
4. Windshield Anti-Ice Flow Control and Shutoff	C	1	0	(O)May be inoperative provided: a) The windshield anti-ice flow control and shutoff valve is verified closed and b) The flight is not conducted into known or forecast icing conditions.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
21 AIR CONDITIONING				
5. Cabin Differential Pressure Gauge	C	1	0	May be inoperative provided: a) Flight is conducted unpressurized and b) Crew and passengers comply with any applicable oxygen requirements. OR
	C	1	0	(O)May be inoperative provided: a) Cabin Altimeter is operating normally and b) Cabin pressurization auto schedule is operating normally.
6. Cabin Altitude Warning System	C	1	0	May be inoperative for unpressurized flight. OR
	C	1	0	May be inoperative for pressurized flight at or below 10,000 feet MSL.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
21 AIR CONDITIONING				
7. Cabin Altimeter	C	1	0	May be inoperative provided: a) Flight is conducted unpressurized and b) Crew and passengers comply with any applicable oxygen requirements. OR
	C	1	0	May be inoperative provided: a) Cabin Differential Pressure Gauge is operating normally, b) Cabin Altitude Warning System is operating normally and c) Cabin pressurization auto schedule is operating normally.
8. Automatic Cabin Air Temperature	C	1	0	May be inoperative provided Manual Cabin Air Temperature Control System is operating normally. OR
	C	1	0	May be inoperative provided: a) Flight is conducted unpressurized, b) Cabin Pressurization Air Source selector remains in OFF or FRESH AIR and c) Crew and passengers comply with any applicable oxygen requirements.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
21 AIR CONDITIONING				
9. Manual Cabin Air Temperature Control System	C	1	0	May be inoperative provided the Automatic Cabin Air Temperature Control System is operating normally. OR
	C	1	0	May be inoperative provided: a) Flight is conducted unpressurized, b) Cabin Pressurization Air Source selector remains in OFF or FRESH AIR and c) Crew and passengers comply with any applicable oxygen requirements.
10. Cabin Door Primary Seal	C	1	0	(M)May be inoperative provided: a) Service Air System is operating normally, b) Any leak of the service air is stopped, c) Cabin Pressurization Source Selector Switch remains in OFF or FRESH AIR, d) Flight is conducted unpressurized and e) Crew and passengers comply with any applicable oxygen requirements.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
21 AIR CONDITIONING				
11. Cabin Door Secondary Seal	C	1	0	May be inoperative provided: a) The secondary seal does not interfere with door operation, b) The primary seal is operative and c) The flight is conducted at or below 25,000 feet MSL with passengers or at or below 31,000 feet without passengers. OR
	C	1	0	May be inoperative provided: a) The flight is conducted unpressurized, b) Cabin Pressurization Air Source selector remains in OFF or FRESH AIR and c) Crew and passengers comply with any applicable oxygen requirements.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
21 AIR CONDITIONING				
12. Pressurization Controller (Auto Schedule Mode)	C	1	0	(O)May be inoperative provided: a) The Isobaric mode is used and b) Manual mode is operating normally. OR
	C	1	0	May be inoperative provided: a) The flight is conducted unpressurized, b) Cabin Pressurization Air Source selector remains in OFF or FRESH AIR and c) Crew and passengers comply with any applicable oxygen requirements.
13. Cabin Fans	C	2	0	May be inoperative provided the Freon Air Conditioning circuit breaker is pulled and collared.
14. Freon Air Conditioning System	C	1	0	(M)May be inoperative provided: a) Freon Air Conditioning System is deactivated and b) Cabin Temperature Control System is operating normally.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
21 AIR CONDITIONING				
15. Cabin Outflow Valves	C	2	0	(M)May be inoperative provided: a) At least one valve is secured open, b) Cabin Pressurization Air Source selector remains in OFF or FRESH AIR, c) The flight is conducted unpressurized and d) Crew and passengers comply with any applicable oxygen requirements.
16. Fresh Air Fan	C	1	0	May be inoperative provided the normal pressurization system is operating normally.
17. Nose Avionics Fan	C	1	0	NOTE: See AFM limitations and procedures.
18. Panel Avionics Fans (annunciated)	C	2	0	NOTE: See AFM limitations and procedures.

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SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
22 AUTO FLIGHT				
1. Autopilot	C	1	0	(M)May be inoperative provided: a) As required by FAR and b) Aircraft is operated using a crew of two.
2. Yaw Damper	C	1	0	(M)May be inoperative provided aircraft is operated using a crew of two.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
23 COMMUNICATIONS				
1. Communications Systems (VHF, HF, UHF)	C	-	-	As required by FAR.
2. Copilot's Audio Control Panel	C	1	0	Right side may be inoperative for operations not requiring a Second in Command.
3. Passenger Address (PA) System				
1) Passenger Configuration	B	1	0	(O)May be inoperative provided alternate, normal and emergency procedures and/or operating restrictions are established and used.
2) Cargo Configuration	C	1	0	
4. Cockpit Voice *** Recorder (CVR)	A	1	0	May be inoperative provided repairs are made within three flight days.
5. Boom Mike	C	-	1	Right side may be inoperative for operations not requiring a Second in Command. NOTE: Boom Mike is required for single pilot operations.
6. Recorded(Talking) Checklist Function	C	1	0	May be inoperative provided written or displayed checklist is available to and used by the flight crew.

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SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
24 ELECTRICAL POWER				
1. DC Ammeters	B	2	1	One may be inoperative provided DC voltmeter and generator caution lights are operative.
2. AC Inverters	B	2	1	
3. Battery	C	1	0	
*** Temperature Indicator				

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
25 EQUIPMENT/FURNISHINGS				
1. Passenger Seat	C	-	0	May be inoperative provided: a) Affected seat does not block emergency egress to the aisle or exit, and b) Affected seat is blocked & placarded "DO NOT OCCUPY." NOTE 1: A seat with an inoperative seatbelt or shoulder harness is considered to be inoperative. NOTE 2: A seat with an inoperative recline mechanism is considered to be inoperative if the seat back cannot be secured in the upright position.
2. Crewmember Shoulder Harnesses	B	2	1	Right side may be inoperative for single pilot operations, however, the seat must remain unoccupied.
3. Aircraft Emergency Locator Transmitter (ELT) ***	C	1	0	As required by FAR. OR
	C	1	0	May be inoperative for published scheduled flights in scheduled air carrier service.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
25 EQUIPMENT/FURNISHINGS				
4. Passenger Convenience Item(s)		-	0	Passenger convenience items, as expressed in this MMEL, are those related to passenger convenience, comfort or entertainment such as, but not limited to, galley equipment, movie equipment, ashtrays, stereo equipment, overhead reading lamps, etc. Items addressed elsewhere in this document shall not be included. (M) and (O) procedures may be required and included in the air carrier's appropriate document. NOTE: Lavatory door ashtrays are not considered passenger convenience item.
5. Passenger Safety Chime ***	C	-	0	
6. First Aid Kits	C	-	-	Any in excess of those required by FAR may be incomplete or missing provided the required distribution is maintained.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
26 FIRE PROTECTION				
1. Portable Fire Extinguishers	C	-	-	Any in excess of those required by FAR may be inoperative or missing provided: a) The inoperative fire extinguisher is tagged inoperative, removed from the installed location, and placed out of sight so it can not be mistaken for a functional unit, and b) Required distribution is maintained.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
27 FLIGHT CONTROLS				
1. Electric Elevator Trim	C	1	0	(M)May be inoperative provided: a) Electric Trim System is deactivated, b) Manual Trim is operative and unaffected, and c) Aircraft is operated using a minimum crew of two.
2. Angle of Attack Indicating System	C	1	0	May be inoperative provided Stall Warning (Stick Shaker) System is operative.

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SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
28 FUEL				
1. Fuel Low Level Annunciating Systems	C	2	1	One may be inoperative.

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SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
30 ICE AND RAIN PROTECTION				
1. Windshield Anti-Ice System	C	1	0	May be inoperative provided the aircraft is not operated in known or forecast icing conditions.
2. Windshield Alcohol System	C	1	0	May be inoperative provided the aircraft is not operated in known or forecast icing conditions.
3. Engine Anti-Ice Systems	C	2	1	(M)One may be inoperative provided: a) Engine Anti-Ice Valve remains OPEN and b) Takeoff and landing field temperatures are not in excess of 10 degrees C. OR
	C	2	1	(M)May be inoperative provided: a) Engine Anti-Ice Valve is failed closed, b) The flight is conducted in day VMC and c) Aircraft is not operated in known or forecast icing conditions. NOTE: See AFM Performance Data.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
30 ICE AND RAIN PROTECTION				
4. Wing Anti-Ice	C	2	1	(O)One may be inoperative provided: a) The wing Anti-Ice Valve is failed closed and b) Aircraft is not operated in known or forecast icing conditions.
5. Rain Removal Systems	C	2	0	May be inoperative provided the aircraft is not operated in precipitation within 5 nautical miles of the airport of takeoff or intended landing.
6. Pitot Heaters (Pilot and Copilot)	B	2	1	One may be inoperative provided: a) Flight is not conducted in known or forecast icing conditions and b) Flight is conducted day VFR.
7. Static Pressure Port Heaters	B	4	3	One may be inoperative provided: a) Flight is conducted in day VFR and b) Flight is not conducted in known or forecast icing conditions.
8. Tail De-Ice Systems	C	2	0	May be inoperative provided flight is not conducted in known or forecast icing conditions.

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SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
31 INDICATING/RECORDING SYSTEMS				
1. Clocks with Sweep second hand or electric digital clock	C	1	0	May be inoperative for VFR operations.
2. Flight Hour Meter	C	1	0	(O)

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

MASTER MINIMUM EQUIPMENT LIST

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SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
32 LANDING GEAR				
1. Anti-Skid System	C	1	0	(O) NOTE: See AFM Procedures.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
33 LIGHTS				
1. Anti-Collision Light System (Wing Strobes)	B	1	0	May be inoperative for day operations. NOTE: This is the system installed to meet the requirements of FAR's.
2. Position Light System	C	1	0	May be inoperative for day operations.
3. Wing Inspection Light	C	1	0	May be inoperative provided a portable lamp/light of adequate capacity for wing and/or control surface inspection is available for night operations in icing conditions.
4. Cockpit/ Flight Deck/ Flight Compartment and Instrument Lighting Systems (Not including cock-pit and engine instrument flood lights)	C	-	-	Individual lights may be inoperative provided the remaining lights are: a) Sufficient to clearly illuminate all required instruments, controls, and other devices for which it is provided, b) Positioned so that direct rays are shielded from flight crewmembers eyes, and c) Lighting configuration and intensity is acceptable to the flight crew.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
33 LIGHTS				
5. Cockpit and Engine Instrument Flood Lights	B	2	0	May be inoperative for day operations.
6. Landing/Taxi/ Recognition Lights	C	2	0	May be inoperative for day operations. OR
	C	2	1	One may be inoperative for night operations.
7. Fasten Seat Belt and No Smoking Sign	B	1	0	(O)May be inoperative provided: a) Passenger Address System is operative and b) Alternate procedures for notifying passengers are established and used. OR
	B	1	0	a) No passengers are carried. NOTE: See ATA 25 for passenger safety chime relief.
8. Master Warning Lights	C	2	1	Right side may be inoperative for operations not requiring a Second in Command.
9. Master Caution Lights	C	2	1	Right side may be inoperative for operations not requiring a Second in Command.
10. Logo Lights ***	C	2	0	

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
33 LIGHTS				
11. Flashing Beacon Light System	C	1	0	
12. Tail Cone Lights	C	2	0	
13. Nose Baggage Compartment Light	C	1	0	
14. Exterior Emergency Lights	C	2	0	May be inoperative for day operations.
15. Interior Emergency Exit Lights	C	3	0	May be inoperative for day operations.
16. Windshield Ice Detection Lights	C	2	0	May be inoperative for day operations. OR
	C	2	1	Right side may be inoperative.
17. Cabin Indirect Lighting System ***	C	1	0	
18. Cabin Reading Lights (Except Right Rear Light)	C	7	0	May be inoperative provided configuration is acceptable to the flight crew. NOTE: Right rear light is part of the Interior Emergency Exit Lights.
19. Cabin Dropped Aisle Lighting System ***	C	1	0	

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SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
34 NAVIGATION				
1. Slip Indicators	B	2	1	Right side may be inoperative.
2. Radio Magnetic Indicator (RMI)	C	-	0	
3. Standby Attitude Indicator (3rd Attitude Indicator)	B	1	0	May be inoperative for day VFR.
4. Distance Measuring Equipment (DME) System(s)	C	-	-	As required by FAR.
5. Weather Radar System	C	1	-	As required by FAR.
6. Automatic Direction Finding (ADF) System(s)	C	-	-	As required by FAR.
7. Marker Beacon Receiver System	C	1	-	May be inoperative provided approach procedures do not require its use.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
34 NAVIGATION				
8. ATC Transponders and Automatic Altitude Reporting Systems	C	-	-	As required by FAR.
9. Radio Altimeter System(s)	C	-	0	May be inoperative provided approach minimums and operational procedures do not require its use.
10. Altitude Alerting System	A	1	0	(O)May be inoperative provided: a) Autopilot with altitude hold is operative and b) Operations are limited to not more than three flight days before repairs are made.
11. Navigation *** Equipment (VOR/ILS, LORAN, RNAV, OMEGA/VLF, INS, GPS, DOPPLER)	C	-	-	As required by FAR.
12. Outside Air Temperature Indicating System	C	1	0	May be inoperative provided OAT/RAT can be determined from a secondary, on board, source such as SAT/TAS or FMS if installed.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
34 NAVIGATION				
13. Non-stabilized Magnetic Compass	B	1	0	May be inoperative provided any combination of three gyro or INS (IRU) stabilized compass systems are operative. OR
	B	1	0	May be inoperative provided: a) Any combination of two stabilized gyro or INS stabilized compass systems are operative and b) Aircraft is operated with dual independent navigation capability and under positive radar control by ATC on the enroute portion of the flight. OR
	B	1	0	May be inoperative for flights that are entirely within areas of magnetic unreliability provided at least two stabilized directional gyro systems are installed, operative and used in conjunction with approved free gyro navigation techniques.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
34 NAVIGATION				
14. Traffic Alert *** Collision Avoidance (TCAS II)				
1) TCAS System	C	-	0	(M)May be inoperative provided the system is deactivated and secured.
2) Combined TA and RA Dual Displays	C	2	1	(O)May be inoperative on the non-flying pilot side provided: a) TA and RA elements and audio functions are operative on flying pilot side, and b) TA and RA display indications are visible to the non-flying pilot.
3) Resolution Advisory (RA) Display System(s)	C	2	1	(O)One may be inoperative on non-flying pilot side.
				OR
	C	-	0	(O)May be inoperative provided: a) All Traffic Alert (TA) display elements and voice command audio functions are operative and b) TA only mode is selected by the crew.
4) TA Display System(s)	C	-	0	(O)May be inoperative provided all installed RA display and audio functions are operative.
15. Traffic Alert *** Collision Avoidance (TCAS I)	C	1	0	

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SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
34 NAVIGATION				
16. Ground Proximity *** Warning System				
1) Modes 1-4	A	-	0	(O)May be inoperative provided: a) Alternate procedures are established, used and b) Repairs are made within two flight days.
2) Test Mode	A	1	0	May be inoperative provided: a) The GPWS is considered inoperative and b) Repairs are made within two flight days.
3) Glideslope Deviation (Mode 5)	B	2	0	
4) Advisory *** Callouts	C	-	0	(O)May be inoperative provided alternate procedures are established and used.
5) Windshear Mode ***	C	-	0	(O)May be inoperative provided alternate procedures are established and used.

SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
35 OXYGEN				
1. Passenger Oxygen System	C	1	0	May be inoperative provided: a) Aircraft is operated with no passengers in the cabin and b) Crew Oxygen System is operating normally.
2. Cabin Passenger Oxygen Drop Out Panels	C	4	0	May be inoperative provided the associated seats are considered inoperative, blocked, and placarded.

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SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
73 ENGINE FUEL & CONTROL				
1. Engine Synchronizer System ***	C	1	0	
2. Fuel Flow Indicating System	B	2	1	One may be inoperative.

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SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
77 ENGINE INDICATING				
1. N(1) % RPM Indicators				
1) Digital Display	C	2	0	May be inoperative provided the tape display for the engine is operative.
2) Tape Display	C	2	0	May be inoperative provided the digital display for the engine is operative.

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SYSTEM & SEQUENCE NUMBERS	Item 1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
78 ENGINE EXHAUST				
1. Thrust Attenuators	C	2	0	(O)May be inoperative provided both both attenuators are hydraulically locked in the stowed position.